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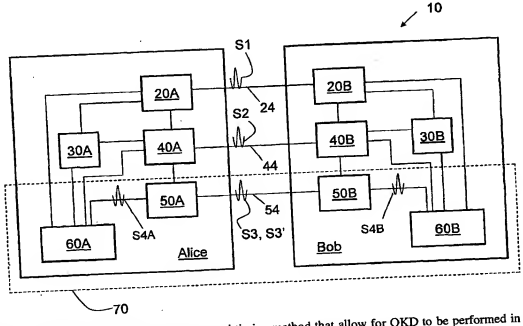
(54) Title: QKD SYSTEMS WITH ROBUST TIMING



(57) Abstract: QKD systems having timing systems and timing method that allow for QKD to be performed in actual field conditions associated with practical commercial applications of quantum cryptography. The QKD system includes optical modems in each QKD station. Each modem has a circulator with an optical receiver and an optical transmitter coupled to it. One of the optical modems includes two phase lock loops and the other optical modem includes a phase lock loop and a transmit clock. Synchronization pulses are exchanged between the optical modems over a timing channel to synchronize the operation of the QKD system. The phase lock loops serve to lock a receive timing domain to a transmit time domain to ensure proper encoding and detection of weak quantum signals exchanged between the QKD stations.

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